THE CHARACTERIZATION AND UPGRADING OF COAL LIQUIDS TO HIGH VALUE FUELS AND CHEMICALS. H. P. Malone Gulf Research & Development Company, P. O. Drawer 2038, Pittsburgh, Pa. 15230

The Gulf coal liquefaction process (CCL) catalytically converts coal to commercially and environmentally acceptable liquid fuels. The object of the present work was to study the upgrading of CCL liquids to higher fuels and chemicals.

This study involves characterizing and upgrading CCL liquids to higher value fuels and chemicals.

Liquids from both subbituminous and bituminous coals were separated into naphtha, middle distillate and gas oil fractions. Each fraction was analyzed and its chemical and physical properties determined. The fractions were found to contain a unique distribution of naphthenic, aromatic, and hydroaromatic components. Each fraction also contains some remaining sulfur and nitrogen contaminants and the oxygen concentration is high.

The following processing schemes were used to upgrade these fractions: (a) Naphtha-Mild hydrotreating; (b) Middle Distillate-Mild hydrotreating and hydrocracking, (c) Gas Oil-Severe hydrotreating.

Reforming feedstock, aromatics, kerosene, and low gravity furnace oils were obtained from these processing schemes.